

General

Guideline Title

Knee stability and movement coordination impairments: knee ligament sprain revision 2017.

Bibliographic Source(s)

Logerstedt DS, Scalzitti D, Risberg MA, Engebretsen L, Webster KE, Feller J, Snyder-Mackler L, Axe MJ, McDonough CM. Knee stability and movement coordination impairments: knee ligament sprain revision 2017. J Orthop Sports Phys Ther. 2017 Nov;47(11):A1-A47. [129 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline update a previous version: Logerstedt DS, Snyder-Mackler L, Ritter RC, Axe MJ, Godges JJ, Orthopaedic Section of the American Physical Therapist Association. Knee stability and movement coordination impairments: knee ligament sprain. J Orthop Sports Phys Ther. 2010 Apr;40(4):A1-A37. [175 references].

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report [Clinical Practice Guidelines We Can Trust](#).

■■■■= Poor ■■■■= Fair ■■■■= Good ■■■■= Very Good ■■■■= Excellent

Assessment	Standard of Trustworthiness
YES	Disclosure of Guideline Funding Source
■■■■	Disclosure and Management of Financial Conflict of Interests
	Guideline Development Group Composition
YES	Multidisciplinary Group
YES	Methodologist Involvement
■■■■	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
■■■■	Search Strategy
■■■■	Study Selection
■■■■	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
■■■■	Grading the Quality or Strength of Evidence

	Benefits and Harms of Recommendations
	Evidence Summary Supporting Recommendations
	Rating the Strength of Recommendations
	Specific and Unambiguous Articulation of Recommendations
	External Review
	Updating

Recommendations

Major Recommendations

Levels of evidence (I–V) and grades of recommendation (A–F) are defined at the end of the "Major Recommendations" field.

Note: These recommendations and clinical practice guidelines are based on the scientific literature published prior to December 2016.

Diagnosis/Classification

Physical therapists should diagnose the International Classification of Diseases (ICD) categories of Sprain and strain involving collateral ligament of knee, Sprain and strain involving cruciate ligament of knee, and Injury to multiple structures of knee, and the associated International Classification of Functioning, Disability and Health (ICF) impairment-based categories of knee instability (b7150 Stability of a single joint) and movement coordination impairments (b7601 Control of complex voluntary movements), using the following history and physical examination findings: mechanism of injury, passive knee laxity, joint pain, joint effusion, and movement coordination impairments. (Grade of Recommendation: A)

Differential Diagnosis

The clinician should suspect diagnostic classifications associated with serious pathological conditions when the individual's reported activity limitations and impairments of body function and structure are not consistent with those presented in the Diagnosis/Classification section of this guideline, or when the individual's symptoms are not resolving with intervention aimed at normalization of the individual's impairments of body function. (Grade of Recommendation: B)

Examination

Outcome Measures: Activity Limitations and Self-Reported Measures

Clinicians should use the International Knee Documentation Committee 2000 Subjective Knee Evaluation Form (IKDC 2000) or Knee injury and Osteoarthritis Outcome Score (KOOS), and may use the Lysholm scale, as validated patient-reported outcome measures to assess knee symptoms and function, and should use the Tegner activity scale or Marx Activity Rating Scale to assess activity level, before and after interventions intended to alleviate the physical impairments, activity limitations, and participation restrictions associated with knee ligament sprain. Clinicians may use the Anterior Cruciate Ligament-Return to Sport after Injury (ACL-RSI) instrument as a validated patient-reported outcome measure to assess psychological factors that may hinder return to sports before and after interventions intended to alleviate fear of reinjury associated with knee ligament sprain. (Grade of Recommendation: B)

Physical Performance Measures

Clinicians should administer appropriate clinical or field tests, such as single-legged hop tests (e.g., single hop for distance, crossover hop for distance, triple hop for distance, and 6-meter timed hop), that can identify a patient's baseline status relative to pain, function, and disability; detect side-to-side asymmetries; assess global knee function; determine a patient's readiness to return to activities; and monitor changes in the patient's status throughout the course of treatment. (Grade of Recommendation: B)

Physical Impairment Measures

When evaluating a patient with ligament sprain over an episode of care, clinicians should use assessments of impairment of body structure and function, including measures of knee laxity/stability, lower-limb movement coordination, thigh muscle strength, knee effusion, and knee joint range of motion. (Grade of Recommendation: B)

Interventions

Continuous Passive Motion

Clinicians may use continuous passive motion in the immediate postoperative period to decrease postoperative pain after anterior cruciate ligament (ACL) reconstruction. (Grade of Recommendation: C)

Early Weight Bearing

Clinicians may implement early weight bearing as tolerated (within 1 week after surgery) for patients after ACL reconstruction. (Grade of Recommendation: C)

Knee Bracing

Clinicians may use functional knee bracing in patients with ACL deficiency. (Grade of Recommendation: C)

Clinicians should elicit and document patient preferences in the decision to use functional knee bracing following ACL reconstruction, as evidence exists for and against its use. (Grade of Recommendation: D)

Clinicians may use appropriate knee bracing for patients with acute posterior cruciate ligament (PCL) injuries, severe medial collateral ligament (MCL) injuries, or posterolateral corner (PLC) injuries. (Grade of Recommendation: F)

Immediate Versus Delayed Mobilization

Clinicians should use immediate mobilization (within 1 week) after ACL reconstruction to increase joint range of motion, reduce joint pain, and reduce the risk of adverse responses of surrounding soft tissue structures, such as those associated with knee extension range-of-motion loss. (Grade of Recommendation: B)

Cryotherapy

Clinicians should use cryotherapy immediately after ACL reconstruction to reduce postoperative knee pain. (Grade of Recommendation: B)

Supervised Rehabilitation

Clinicians should use exercises as part of the in-clinic supervised rehabilitation program after ACL reconstruction and should provide and supervise the progression of a home-based exercise program, providing education to ensure independent performance. (Grade of Recommendation: B)

Therapeutic Exercises

Weight-bearing and non-weight-bearing concentric and eccentric exercises should be implemented within 4 to 6 weeks, 2 to 3 times per week for 6 to 10 months, to increase thigh muscle strength and functional performance after ACL reconstruction. (Grade of Recommendation: A)

Neuromuscular Electrical Stimulation

Neuromuscular electrical stimulation should be used for 6 to 8 weeks to augment muscle strengthening exercises in patients after ACL reconstruction to increase quadriceps muscle strength and enhance short-term functional outcomes. (Grade of Recommendation: A)

Neuromuscular Re-Education

Neuromuscular re-education training should be incorporated with muscle strengthening exercises in patients with knee stability and movement coordination impairments. (Grade of Recommendation: A)

Definitions

Levels of Evidence*

Level	Intervention/Prevention	Pathoanatomic/Risk/Clinical Course/Prognosis/Differential Diagnosis	Diagnosis/Diagnostic Accuracy	Prevalence of Condition/Disorder	Exam/Outcomes
I	SR of high-quality RCTs High-quality RCT [†]	SR of prospective cohort studies High-quality prospective cohort study [‡]	SR of high-quality diagnostic studies High-quality diagnostic study [§] with validation	SR, high-quality cross-sectional studies High-quality cross-sectional study [¶]	SR of prospective cohort studies High-quality prospective cohort study
II	SR of high-quality cohort studies High-quality cohort study [‡] Outcomes study or ecological study Lower-quality RCT [¶]	SR of retrospective cohort study Lower-quality prospective cohort study High-quality retrospective cohort study Consecutive cohort Outcomes study or ecological study	SR of exploratory diagnostic studies or consecutive cohort studies High-quality exploratory diagnostic studies Consecutive retrospective cohort	SR of studies that allows relevant estimate Lower-quality cross-sectional study	SR of lower-quality prospective cohort studies Lower-quality prospective cohort study
III	SRs of case-control studies High-quality case-control study Lower-quality cohort study	Lower-quality retrospective cohort study High-quality cross-sectional case-control study	Lower-quality exploratory diagnostic studies Nonconsecutive retrospective cohort	Local nonrandom study	High-quality cross-sectional study
IV	Case series	Case series	Case-control study	--	Lower-quality cross-sectional study
V	Expert opinion	Expert opinion	Expert opinion	Expert opinion	Expert opinion

Abbreviations: RCT, randomized clinical trial; SR, systematic review.

*Adapted from Phillips B, Ball C, Sackett D, et al. Oxford Centre for Evidence-based Medicine - Levels of Evidence (March 2009). Available at: <http://www.cebm.net/index.aspx?o=1025>. See also Appendix G in the original guideline document.

†High quality includes RCTs with greater than 80% follow-up, blinding, and appropriate randomization procedures.

‡High-quality cohort study includes greater than 80% follow-up.

§High-quality diagnostic study includes consistently applied reference standard and blinding.

‡•High-quality prevalence study is a cross-sectional study that uses a local and current random sample or censuses.

¶Weaker diagnostic criteria and reference standards, improper randomization, no blinding, and less than 80% follow-up may add bias and threats to validity.

Grades of Recommendation Based on Strength of Evidence

Grades of Recommendation Based On		Strength of Evidence
A	Strong evidence	A preponderance of level I and/or level II studies support the recommendation. This must include at least 1 level I study
B	Moderate evidence	A single high-quality randomized controlled trial or a preponderance of level II studies support the recommendation
C	Weak evidence	A single level II study or a preponderance of level III and IV studies, including statements of consensus by content experts, support the recommendation
D	Conflicting evidence	Higher-quality studies conducted on this topic disagree with respect to their conclusions. The recommendation is based on these conflicting studies
E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models/principles, or from basic sciences/bench research support this conclusion
F	Expert opinion	Best practice based on the clinical experience of the guidelines development team

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Knee stability and movement coordination impairments associated with knee ligament sprain

Guideline Category

Diagnosis

Evaluation

Management

Rehabilitation

Treatment

Clinical Specialty

Family Practice

Orthopedic Surgery

Physical Medicine and Rehabilitation

Rheumatology

Sports Medicine

Intended Users

Health Care Providers

Physical Therapists

Physician Assistants

Physicians

Students

Utilization Management

Guideline Objective(s)

- To describe evidence-based physical therapy practice, including diagnosis, prognosis, intervention, and assessment of outcome for musculoskeletal disorders commonly managed by orthopaedic and sports physical therapists
- To classify and define common musculoskeletal conditions using the World Health Organization's terminology related to impairments of body function and body structure, activity limitations, and participation restrictions
- To identify interventions supported by current best evidence to address impairments of body function and structure, activity limitations, and participation restrictions associated with common musculoskeletal conditions
- To identify appropriate outcome measures to assess changes resulting from physical therapy interventions in body function and structure as well as in activity and participation of the individual
- To provide a description to policy makers, using internationally accepted terminology, of the practice of orthopaedic physical therapists
- To provide information for payers and claims reviewers regarding the practice of orthopaedic physical therapy for common musculoskeletal conditions
- To create a reference publication for orthopaedic physical therapy clinicians, academic instructors, clinical instructors, students, interns, residents, and fellows regarding the best current practice of orthopaedic physical therapy

Target Population

Adult patients with knee stability and movement coordination impairments/knee ligament sprain

Interventions and Practices Considered

Diagnosis

Diagnosis and classification according to International Statistical Classification of Diseases and Related Health Problems (ICD) criteria and International Classification of Functioning, Disability, and Health (ICF) criteria

Differential diagnosis

Examination using validated outcome measures: activity limitations and self-reported measures

International Knee Documentation Committee 2000 Subjective Knee Evaluation Form (IKDC 2000)

Knee injury and Osteoarthritis Outcome Score (KOOS)

Lysholm scale

Tegner activity scale

Marx Activity Rating Scale

Anterior Cruciate Ligament-Return to Sport after Injury (ACL-RSI) instrument

Examination using physical performance measures: single-legged hop tests (single hop for distance, crossover hop for distance, triple hop for distance, 6-meter timed hop)

Examination using physical impairment measures (i.e., knee laxity/stability, lower-limb movement coordination, thigh muscle strength, knee effusion, and knee joint range of motion)

Management/Treatment

Interventions following anterior cruciate ligament (ACL) reconstruction

Continuous passive motion

Early weight bearing

Functional knee bracing

Immediate versus delayed mobilization

Cryotherapy

Supervised rehabilitation

Therapeutic exercises (weight-bearing and non-weight-bearing concentric and eccentric exercises)

Neuromuscular electrical stimulation

Neuromuscular re-education

Major Outcomes Considered

- Knee laxity and instability
- Range of motion
- Muscle strength
- Activity limitation
- Lower-limb coordination
- Global knee function
- Return to activities

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The authors of this guideline revision worked with research librarians with expertise in systematic reviews to perform a systematic search for concepts associated with ligament injuries and instabilities of the knee for articles published since 2008 related to classification, examination, and intervention strategies consistent with previous guideline development methods related to International Classification of Functioning, Disability and Health (ICF) classification. Briefly, the following databases were searched from 2008 to December 2016: MEDLINE (PubMed; 2008 to date), Scopus (Elsevier; 2008 to date), CINAHL (EBSCO; 2008 to date), SPORTDiscus (EBSCO; 2008 to date), Cochrane Library (Wiley; 2008 to date). (See Appendix A in the original guideline document for full search strategies and Appendix B for search dates and results.)

Articles contributing to recommendations were reviewed based on specified inclusion and exclusion criteria with the goal of identifying evidence relevant to physical therapist clinical decision making for adult persons with knee stability and movement coordination impairments/knee ligament sprain. The title and abstract of each article were reviewed independently by 2 members of the clinical practice guideline (CPG) development team for inclusion (see Appendix C in the original guideline document for inclusion and exclusion criteria). Full-text review was then similarly conducted to obtain the final set of articles for contribution to the recommendations. The team leader provided the final decision for discrepancies that were not resolved by the review team. For selected relevant topics that were not appropriate for the development of recommendations, such as incidence and imaging, articles were not subject to systematic review and were not included in the flow chart.

Number of Source Documents

Relevant articles appraised n = 248

See Appendix D in the original guideline document for a flow chart of articles and Appendix E for articles included in recommendations by topic.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence*

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II	SR of high-quality cohort studies High-quality cohort study [‡] Outcomes study or ecological study Lower-quality RCT ^{¶¶}	SR of retrospective cohort study Lower-quality prospective cohort study High-quality retrospective cohort study Consecutive cohort Outcomes study or ecological study	SR of exploratory diagnostic studies or consecutive cohort studies High-quality exploratory diagnostic studies Consecutive retrospective cohort	SR of studies that allows relevant estimate Lower-quality cross-sectional study	SR of lower-quality prospective cohort studies Lower-quality prospective cohort study
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[†]High quality includes RCTs with greater than 80% follow-up, blinding, and appropriate randomization procedures.

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§High-quality diagnostic study includes consistently applied reference standard and blinding.
â•High-quality prevalence study is a cross-sectional study that uses a local and current random sample or censuses.
¶Weaker diagnostic criteria and reference standards, improper randomization, no blinding, and less than 80% follow-up may add bias and threats to validity.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Levels of Evidence

Individual clinical research articles were graded according to criteria adapted from the Centre for Evidence-Based Medicine, Oxford, United Kingdom for diagnostic, prospective, and therapeutic studies. In 3 teams of 2, each reviewer independently assigned a level of evidence and evaluated the quality of each article using a critical appraisal tool. See the "Rating Scheme for the Strength of Evidence" field for the levels of evidence table and Appendix G in the original guideline document for details on procedures used for assigning levels of evidence. The evidence update was organized from highest level of evidence to lowest level.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Content experts were appointed by the Orthopaedic Section of the American Physical Therapy Association (APTA) to conduct a review of the literature and to develop an updated "Knee Stability and Movement Coordination Impairments: Knee Ligament Sprain" clinical practice guideline (CPG) as indicated by the current state of the evidence in the field. The aims of the revision were to provide a concise summary of the evidence since publication of the original guideline and to develop new recommendations or revise previously published recommendations to support evidence-based practice.

Grades of Evidence

The strength of the evidence supporting the recommendations was graded according to the previously established methods for the 2010 guideline and those provided in the original guideline document. Each team developed recommendations based on the strength of evidence, including how directly the studies addressed the question on knee stability and movement coordination impairments/ knee ligament sprain population. In developing their recommendations, the authors considered the strengths and limitations of the body of evidence and the health benefits, side effects, and risks of tests and interventions.

Rating Scheme for the Strength of the Recommendations

Grades of Recommendation Based on Strength of Evidence

Grades of Recommendation Based On		Strength of Evidence
A	Strong evidence	A preponderance of level I and/or level II studies support the recommendation. This must include at least 1 level I study
B	Moderate evidence	A single high-quality randomized controlled trial or a preponderance of level II studies support the recommendation
C	Weak evidence	A single level II study or a preponderance of level III and IV studies, including statements of consensus by content experts, support the recommendation
D	Conflicting evidence	Higher-quality studies conducted on this topic disagree with respect to their conclusions. The recommendation is based on these conflicting studies
E	Theoretical/foundational evidence	A preponderance of evidence from animal or cadaver studies, from conceptual models/principles, or from basic sciences/bench research support this conclusion
F	Expert opinion	Best practice based on the clinical experience of the guidelines development team

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Guideline Review Process and Validation

Identified reviewers who are experts in knee ligament injury management and rehabilitation reviewed the content and methods of this clinical practice guideline (CPG) for integrity, accuracy, and to ensure that it fully represents the condition. Any comments, suggestions, or feedback from the expert reviewers were delivered to the authors and editors to consider and make appropriate revisions. These guidelines were also posted for public comment and review on the orthopt.org Web site, and a notification of this posting was sent to the members of the Orthopaedic Section, American Physical Therapy Association (APTA), Inc. Any comments, suggestions, and feedback gathered from public commentary were sent to the authors and editors to consider and make appropriate revisions in the guideline. In addition, a panel of consumer/patient representatives and external stakeholders, such as claims reviewers, medical coding experts, academic educators, clinical educators, physician specialists, and researchers, also reviewed the guideline and provided feedback and recommendations that were given to the authors and editors for further consideration and revisions. Last, a panel of consumer/patient representatives and external stakeholders and a panel of experts in physical therapy practice guideline methodology annually review the Orthopaedic Section, APTA's International Classification of Functioning, Disability and Health (ICF)-based Clinical Practice Guideline Policies and provide feedback and comments to the Clinical Practice Guideline Coordinator and Editors to improve the APTA's guideline development and implementation processes.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Improvement in scores on validated outcome measurement scales

Refer to the "Evidence Update" section in the original guideline document for specific benefits of the interventions.

Potential Harms

Refer to the "Evidence Update" sections of the original guideline document for specific harms of interventions.

Qualifying Statements

Qualifying Statements

Statement of Intent

These guidelines are not intended to be construed or to serve as a standard of medical care. Standards of care are determined on the basis of all clinical data available for an individual patient and are subject to change as scientific knowledge and technology advance and patterns of care evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every patient, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made based on clinician experience and expertise in light of the clinical presentation of the patient, the available evidence, available diagnostic and treatment options, and the patient's values, expectations, and preferences. However, it is suggested that significant departures from accepted guidelines should be documented in the patient's medical records at the time the relevant clinical decision is made.

Implementation of the Guideline

Description of Implementation Strategy

Dissemination and Implementation Tools

In addition to publishing these guidelines in the *Journal of Orthopaedic & Sports Physical Therapy (JOSPT)*, these guidelines will be posted on clinical practice guideline (CPG) areas of both the *JOSPT* and the Orthopaedic Section, American Physical Therapy Association (APTA) Web sites for free access, and will be submitted for posting on the Agency for Healthcare Research and Quality Web site (www.guideline.gov). The implementation tools planned to be available for patients, clinicians, educators, payers, policy makers, and researchers, and the associated implementation strategies, are listed in a table in the original guideline document.

Implementation Tools

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Logerstedt DS, Scalzitti D, Risberg MA, Engebretsen L, Webster KE, Feller J, Snyder-Mackler L, Axe MJ, McDonough CM. Knee stability and movement coordination impairments: knee ligament sprain revision 2017. *J Orthop Sports Phys Ther.* 2017 Nov;47(11):A1-A47. [129 references] [PubMed](#)

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2017 Nov

Guideline Developer(s)

American Physical Therapy Association, Inc., The Orthopaedic Section - Medical Specialty Society

Source(s) of Funding

The Orthopaedic Section of the American Physical Therapy Association (APTA), Inc.

Guideline Committee

Clinical Practice Guideline (CPG) Development Team

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Financial Disclosures/Conflicts of Interest

The authors declared relationships and developed a conflict management plan, which included submitting a Conflict of Interest form to the Orthopaedic Section, American Physical Therapy Association (APTA), Inc. Articles that were authored by a reviewer were assigned to an alternate reviewer. Funding was provided to the clinical practice guideline (CPG) development team for travel and expenses for CPG development training. The CPG development team maintained editorial independence.

Guideline Status

This is the current release of the guideline.

This guideline update a previous version: Logerstedt DS, Snyder-Mackler L, Ritter RC, Axe MJ, Godges JJ, Orthopaedic Section of the American Physical Therapist Association. Knee stability and movement coordination impairments: knee ligament sprain. J Orthop Sports Phys Ther. 2010 Apr;40(4):A1-A37. [175 references].

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the [American Physical Therapy Association, Inc., Orthopedic Section Web site](#) .

Availability of Companion Documents

The following are available:

Knee ligament sprain: clinical practice guidelines revision 2017. Decision tree. J Orthop Sports Phys Ther. 2017 Nov; 47(11). Available from the [American Physical Therapy Association, Inc., Orthopedic Section Web site](#) .

APTA clinical practice guideline process manual. Alexandria (VA): American Physical Therapy Association (APTA); 2018. 63 p. Available from the [APTA Web site](#) .

Patient Resources

The following is available:

Knee ligament sprains and tears: clinical practice guidelines—ensuring best care. JOSPT perspectives for patients. J Orthop Sports Phys Ther 2017;47(11):824. Available from the [Journal of Orthopaedic & Sports Physical Therapy Web site](#) .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on May 13, 2011. This summary was updated by ECRI Institute on March 19, 2018. The information was verified by the guideline developer on April 6, 2018.

This NEATS assessment was completed by ECRI Institute on March 14, 2018. The information was verified by the guideline developer on April 6, 2018.

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